

CLAIMS

We claim:

1. A coating composition comprising a multi-stage emulsion polymer that is both radiation curable and removable and includes chemically reactive functional groups in the coating that react with one or more chemical stripping agents, effecting the removal of the coating from a substrate.
2. The coating of claim 1 wherein the multi-stage emulsion polymer comprises, as polymerized monomer units (a) zero to 60 percent, based on weight of the polymer, of a mono-ethylenically unsaturated monomer containing a carboxylic acid functional group; (b) 1 to 80 percent, based on weight of the polymer, of a (meth)acrylic monomer containing functional groups selected from one or more monoethylenically unsaturated monoepoxides, glycidyl (meth)acrylate, allyl glycidyl ether, glycidyl cinnamates, glycidyl crotonates, glycidyl itaconates, glycidyl norbornenyl ester, glycidyl norbornenyl ether and other acrylate containing pendant vinyl groups; (c) 20 to 80 percent, based on weight of the polymer, of one or more (C<sub>1</sub>-C<sub>20</sub>)alkyl (meth)acrylate ester monomers; and (e) zero to 10 percent, based on weight of the polymer, of one or more other copolymerizable monomers.
3. The coating of claim 1 wherein the UV curable, removable composition is included within one or more layers applied on top of a substrate.
- 4 The coating of claim 1 wherein the UV curable, removable composition is included within one or more layers applied on top of a base coat, the base coat disposed on top of a substrate.

5. The coating of claim 3 or claim 4 wherein the substrate refers to any surface that is vertical, horizontal or inclined upon which the coating is applied and is selected from the group consisting of flooring, wall, ceiling, tile materials, vinyl floor tiles, tiles coated with sealer or primer, ceramic tiles, wood, metal, concrete, marble, slate and simulated natural stone.
6. A method for applying a UV cured, highly cross-linked coating as one or more layers to a substrate and subsequently removing all coating layers from a substrate comprising the steps of:
  - (a) applying one or more layers of a coating comprising a curable, removable multi-stage emulsion polymer;
  - (b) curing the composition to form a highly cross-linked coating over the substrate by exposing the composition to ultraviolet radiation; and
  - (c) removing all coating layers from the substrate by exposing the coating to one or more chemical stripping agents.
7. The method according to claim 6 wherein the curable, removable multi-stage emulsion polymer comprises, as polymerized monomer units (a) zero to 60 percent, based on weight of the polymer, of a mono-ethylenically unsaturated monomer containing a carboxylic acid functional group; (b) 1 to 80 percent, based on weight of the polymer, of a (meth)acrylic monomer containing functional groups selected from one or more monoethylenically unsaturated monoepoxides, glycidyl (meth)acrylate, allyl glycidyl ether, glycidyl cinnamates, glycidyl crotonates, glycidyl itaconates, glycidyl norbornenyl ester, glycidyl norbornenyl ether and other acrylate containing pendant vinyl groups; (c) 20 to 80 percent, based on weight of the polymer, of one or more (C<sub>1</sub>-C<sub>20</sub>)alkyl (meth)acrylate ester monomers; and (e) zero to 10 percent, based on weight of the polymer, of one or more other co-polymerizable monomers.

8. A method for preparing a UV curable and removable multi-layer coating comprising (a) applying one or more layers of a base coat to a substrate wherein the base coat comprises a polymer product having a gel fraction of 0.3 to 0.95 in a solvent selected from one or more of acetone and tetrahydrofuran and wherein the base coat is applied in one or more separate applications, allowing the base to dry after each application; and (b) applying one or more layers of a coating comprising a curable, removable multi-stage emulsion polymer.
9. The method according to claim 8 wherein the curable, removable multi-stage emulsion polymer comprises, as polymerized monomer units (a) zero to 60 percent, based on weight of the polymer, of a mono-ethylenically unsaturated monomer containing a carboxylic acid functional group; (b) 1 to 80 percent, based on weight of the polymer, of a (meth)acrylic monomer containing functional groups selected from one or more monoethylenically unsaturated monoepoxides, glycidyl (meth)acrylate, allyl glycidyl ether, glycidyl cinnamates, glycidyl crotonates, glycidyl itaconates, glycidyl norbornenyl ester, glycidyl norbornenyl ether and other acrylate containing pendant vinyl groups; (c) 20 to 80 percent, based on weight of the polymer, of one or more (C<sub>1</sub>-C<sub>20</sub>)alkyl (meth)acrylate ester monomers; and (e) zero to 10 percent, based on weight of the polymer, of one or more other co-polymerizable monomers.
10. The method according to claim 8 or claim 9 wherein the substrate refers to any surface that is vertical, horizontal or inclined upon which the coating is applied and is selected from the group consisting of flooring, wall, ceiling, tile materials, vinyl floor tiles, tiles coated with sealer or primer, ceramic tiles, wood, metal, concrete, marble, slate and simulated natural stone.